

Residential Building Consistency

Oct 11, 2017



Agenda

- Welcome, Housekeeping & Customer Service
- Reminders -
 - Schedule for Building Consistency Meetings
 - Commercial – 1st Tuesday; Residential – 1st Wednesday
 - Monthly Deadline for Submission of Items
- Training Opportunities
- Residential Consistency Items
- Training Session – TrusJoist – Holly Woitovich

Current Topics

Limited time only, Free 2012 NC Code Downloads Available

The Building Code Council and the NC Department of Insurance have negotiated for and achieved funding from the NC General Assembly for the offering of a free (free to the user) downloads of the 2012, 2014 and 2015 NC Building Codes. These codes are the fully downloadable and printable for a limited time courtesy of the Department of Insurance. The link to the codes is:

<https://codes.iccsafe.org/public/collections/nc>

The version has the following benefits:

- Fully Downloadable, searchable, printable
- Contains all of the Building Code Council approved amendments from 2012 – 2017 inserted directly into document
- Capable of using electronic sticky notes and highlights when downloaded.

FY 2018 Building Consistency Meetings

Commercial

- Nov 7
- Dec 5 – Product Fair
- Jan 2
- Feb 6
- Mar 6
- Apr 3
- May 1
- Jun 5

Residential

- Nov 1
- Dec 6 – Product Fair
- Jan 3
- Feb 7
- Mar 7
- Apr 4
- May 2
- Jun 6

Deadline for submission of building consistency items – 3rd Wed of each Month



- Items can be submitted by email jeff.vernon@mecklenburgcountync.gov
- or online: <http://charmeck.org/mecklenburg/county/LUESA/CodeEnforcement/Tools/Forms/Pages/ConsisTopicSubmit.aspx>
- or by contacting any of the Building Consistency Team members

ISO Opportunities in FY 2018

Consistency meetings for each trade:

Commercial Building – 1st Tuesday

Residential Building – 1st Wednesday

Electrical – 2nd Wednesday

Mechanical – Last Tuesday of the month

Plumbing – Last Wednesday of the month

Training Topics for Future Consistency Mtgs

UPCOMING TOPICS INCLUDE:

- Residential stair construction
- **Fireblocking vs. Draftstopping – Jan 3, 2018**
- Roof truss systems
- Isokern fireplaces and their installation
- **OTHER SUGGESTIONS?**

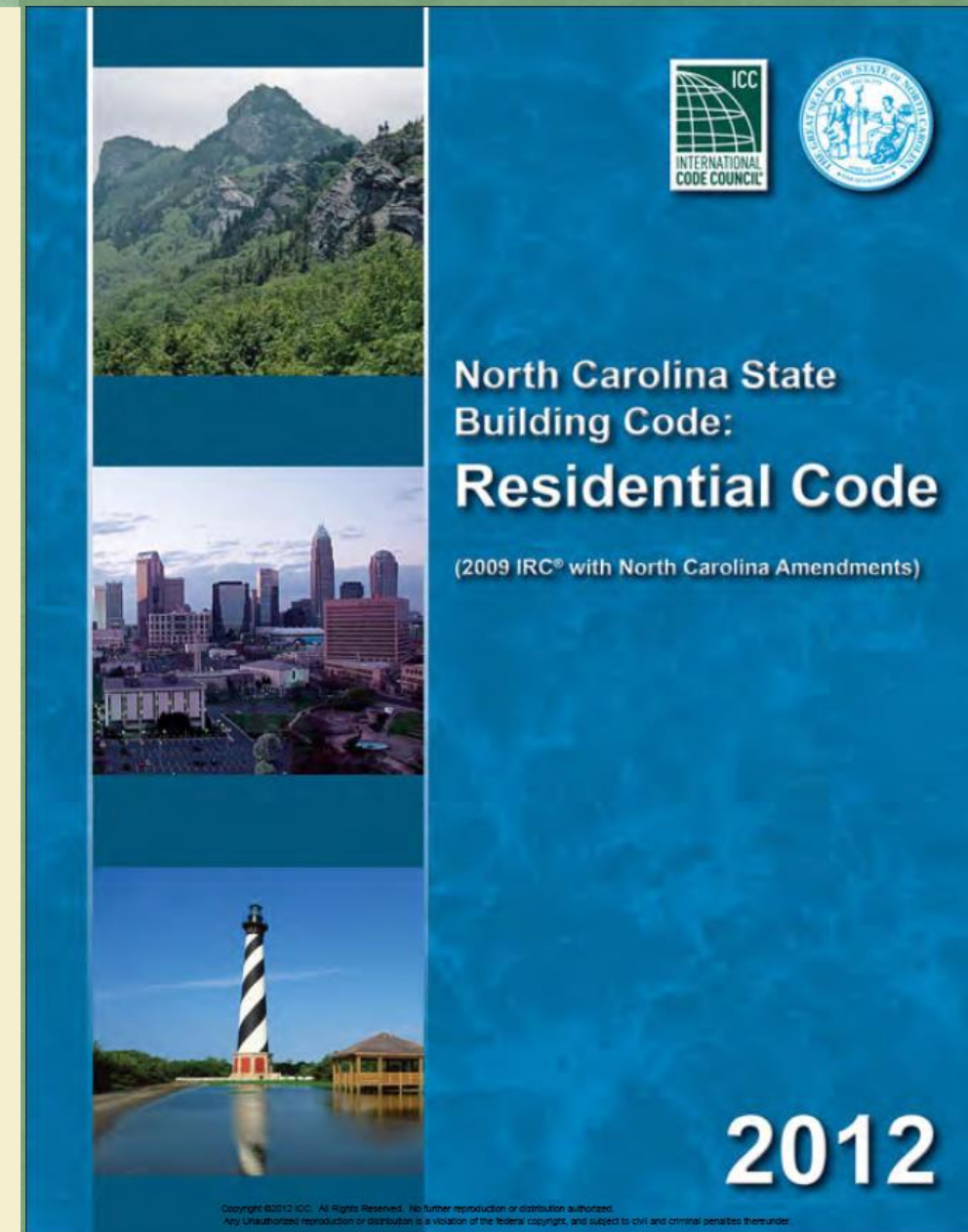
Building Code Qualification Classes – FY 18

Nov 17 – 19; Dec 1 – 3 – Level I

Feb 10 – 12; 24 & 25 – Level III

Mar 23 – 25; Apr 7 & 8 – Level II

May 4 – 6 ; 18 – 20 – Level I



Residential Consistency

October 11, 2017

Open Items

- **None**

New Residential Consistency Items

October 11, 2017

New Residential Consistency Items for October 2017

Q: What is the location of finished grade for measurement of footings? (What is the depth to bottom of footing from top of form boards?)

Q: When do I inspect thickened slabs? At footing inspection or at slab inspection?

Q: What is the proper configuration of a closed crawl space? What permits are required?

continued

New Residential Consistency Items for October 2017

Q: What is allowed in place of collar ties for cathedral ceilings?

Q: Are pull down stairs in garage ceilings required to be fire-rated?

Q: Where is the walkline measured on winders?

Q: Which trade looks at Isokern Fireplaces and the loads they add to the building?

continued

New Residential Consistency Items for October 2017

Q: What are the required clearances for foam insulation?

Q: Do spray foam insulated walls still require fireblocking?

Q: When do we get the ESR for sprayed foam in attics?

Q: How are we addressing termite treatment on additions?

Q: When does the code apply to an outdoor fireplace?

Q: What is the location of finished grade for measurement of footings? (What is the depth to bottom of footing from top of form boards?)

A: Depends on the height of form boards but usually 18" - 20" (12" ftg + 6" to sill plate)



Q: When do I inspect thickened slabs? At footing inspection or at slab inspection?

A: Usually at slab since these are part of the slab pour. Don't forget under slab inspection before slab prep is done. Also, beware of extra deep footings in the slab such as the one in the picture.



Q: What is the proper configuration of a closed crawl space? What permits are required?

A: See JG's PPT - Sealed Crawl Spaces (4/6/2016)
Required permits depend on work done and methods used.
B at least, maybe E, M & P

- R409 Closed Crawl Spaces
 - R409.1 Air Sealed Walls – no fnd vents or openings
 - R409.1.1 Caulking and Sealants - close up all holes & gaps
 - R409.1.2 Access panel / door – seal & latch, insulate to R-2
 - R409.2 Groundwater Vapor Retarder – evap. of water
 - R409.2.1 GVR - 6-mil poly, joints lapped 12" min.; drain
 - R409.2.2 Liner – 3" below TOW, 4" above floor on columns
 - R409.2.2.1 Termite insp gap – 3" btwn top of liner & wood sill
 - R409.2.3 Concrete floor Surfacing – 2" on top of VB
 - R409.2.4 Drains & Vent Terminations – outdoors, not in crawl
 - R409.3 Wall Damp Proofing – if outside higher than inside
 - R409.4 Site Grading – per R401.3 (6" within 10')
 - R409.5 Space Moisture Vapor Control – at least 1 method
 - R409.5.1 Dehumidifier – permanent; 15 pints/day
 - R409.5.2 Supply Air – 1 cfm/30sf; no return; backflow damper
 - R409.5.3 House Air – 1cfm/50sf; continuous duty; no return
 - R409.5.4 Exhaust Fan – 1cfm/50sf; cont. duty; no makeup air

Q: What is the proper configuration of a closed crawl space? What permits are required?

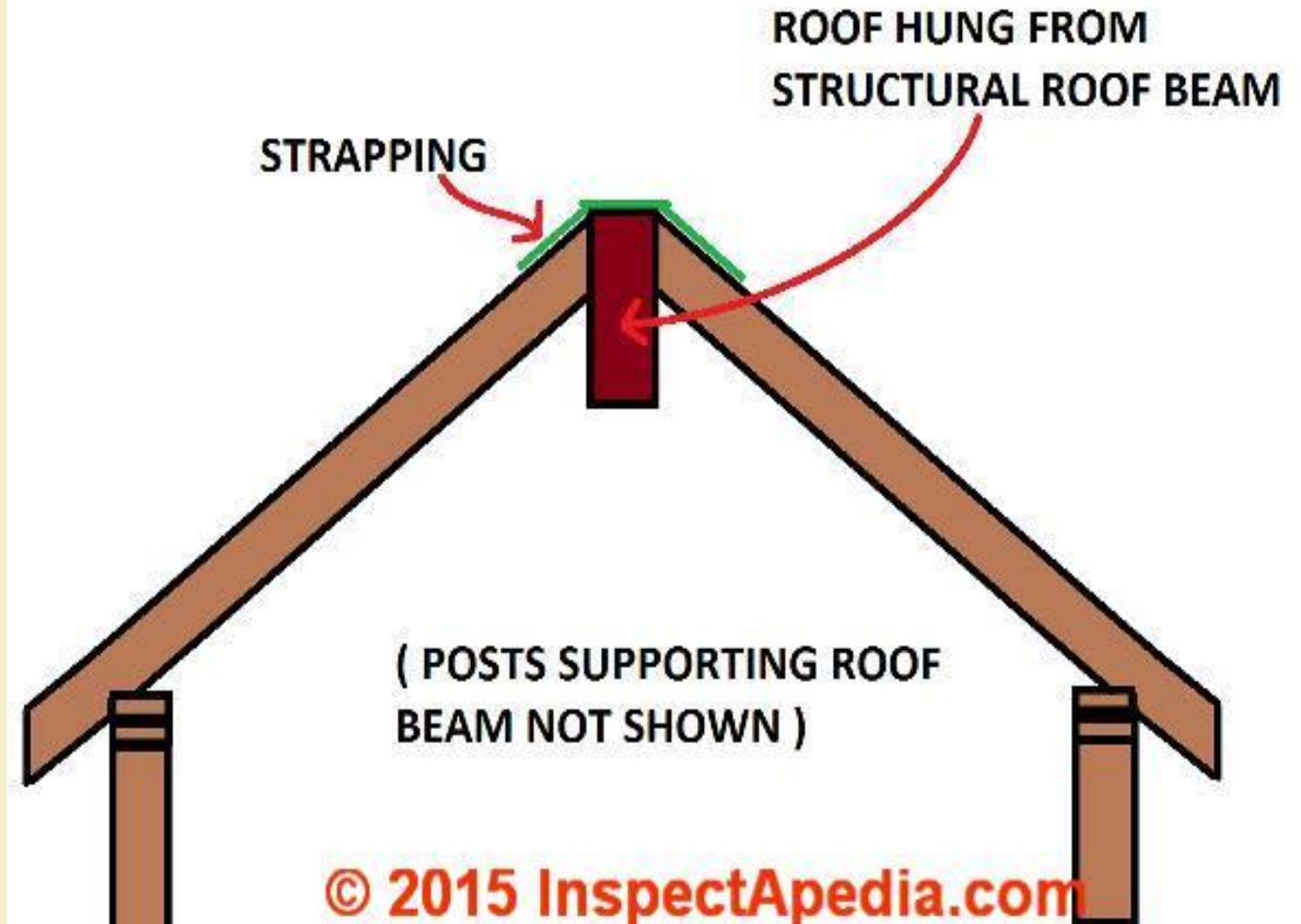
A: See JG's PPT - Sealed Crawl Spaces (4/6/2016)
Required permits depend on work done and methods used.
B at least, maybe E, M & P

- R409 Closed Crawl Spaces (*cont.'d*)
 - R409.6 Plenums – no plbg cleanouts or gas lines; thermal barrier required for foam insulation
 - R409.7 Combustion Air – don't starve fuel-burning appliances
 - R409.8 Insulation – can be in floor or at exterior wall
 - Exception – must be at walls when crawl is intentionally conditioned
 - R409.8.1 Wall Insulation - 3" below TOW, 3" above floor
 - R409.8.1.1 Termite insp gap – polystyrene, polyiso, or other foam
 - R409.8.1.1.1 Earth floored - 3" btwn top of liner & wood sill; 3" gap at bottom
 - R409.8.1.1.2 Concrete floored - 3" btwn top of liner & wood sill; 3" gap at bottom
 - R409.8.1.2 Porous Insulation – 3" btwn top of liner & wood sill; 3" gap at bottom
 - R409.8.2 Foam Plastic Fire Safety – Class A or ½ thermal barrier
 - Exception – if plenum, must have thermal barrier
 - R409.9 Floor Air Leakage Control – seal with non-porous
 - R409.10 Duct Air Leakage Control – seal with mastic or other
 - R409.11 Access – min 18" x 24" or per NCMC
 - R409.12 Removal of Debris – no organic or construction mat'l
 - R409.13 Finished Grade – at bottom of ftgs unless water doesn't drain

Q: What is allowed in place of collar ties for cathedral ceilings?

A: Strapping

Where ceiling joists are not connected to the rafters at the top wall plate, joists connected higher in the *attic* shall be installed as rafter ties, or rafter ties shall be installed to provide a continuous tie. Where ceiling joists are not parallel to rafters, subflooring or metal straps attached to the ends of the rafters shall be installed in a manner to provide a continuous tie across the building. Rafter ties shall be a minimum of 2-inch by 4-inch (51



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Q: Are pull down stairs in garage ceilings required to be fire-rated?

A: The continuity of the ceiling protection must be maintained so they must meet code as an opening.

INFORMAL CODE INTERPRETATION

NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-661-5880

Garage Fire Separation Opening Protection

Code: 2012 Residential Code
Section: R302.5.1

Date: July 2, 2012

Question:

A garage is required to be separated from the dwelling and its attic area by gypsum board (taped or blocked) applied to the garage side. What types of openings are permitted in the gypsum board membrane and what level of protection is required?

Answer:

Doors, including attic access, are required to be either 1-3/8-inch solid core wood, 1-3/8 honeycomb core steel, or 20-minute fire-resistance rated. A standard frame and hardware (dead bolt, peep hole, etc.) are acceptable. Door glazing must be either wire glass in a metal frame or 20-minute fire-resistance rated. Ducts located in the garage must be 26 gage steel and have no openings into the garage. Other penetrations (electrical, plumbing, etc.) must be fireblocked as required for top plates. Section R302.5.1 prohibits openings from the garage directly into a sleeping room.

Key Words:

bedroom, bonus room, habitable room

Q: Are pull down stairs in garage ceilings required to be fire-rated?

A: The continuity of the ceiling protection must be maintained so they must meet code as an opening.

CODE



MECKLENBURG COUNTY

INTERPRETATION

Building Code Enforcement

CODE: 2006 NC RESIDENTIAL CODE

SUBJECT: PULL DOWN ATTIC STAIRS AND SCUTTLE HOLES IN GARAGE CEILINGS

REVIEWED: RESIDENTIAL CONSISTENCY TEAM

Question:

Does a pull down stair/scuttle hole, installed in the ceiling of an attached garage, have to meet the requirements for opening protection?

Code reference:

Section R309.1 Opening protection & Section R309.2 Separation required

Answer:

Yes, attic access doors in garage ceilings need to meet the opening protection requirement for garage separation.

Acceptable alternates:

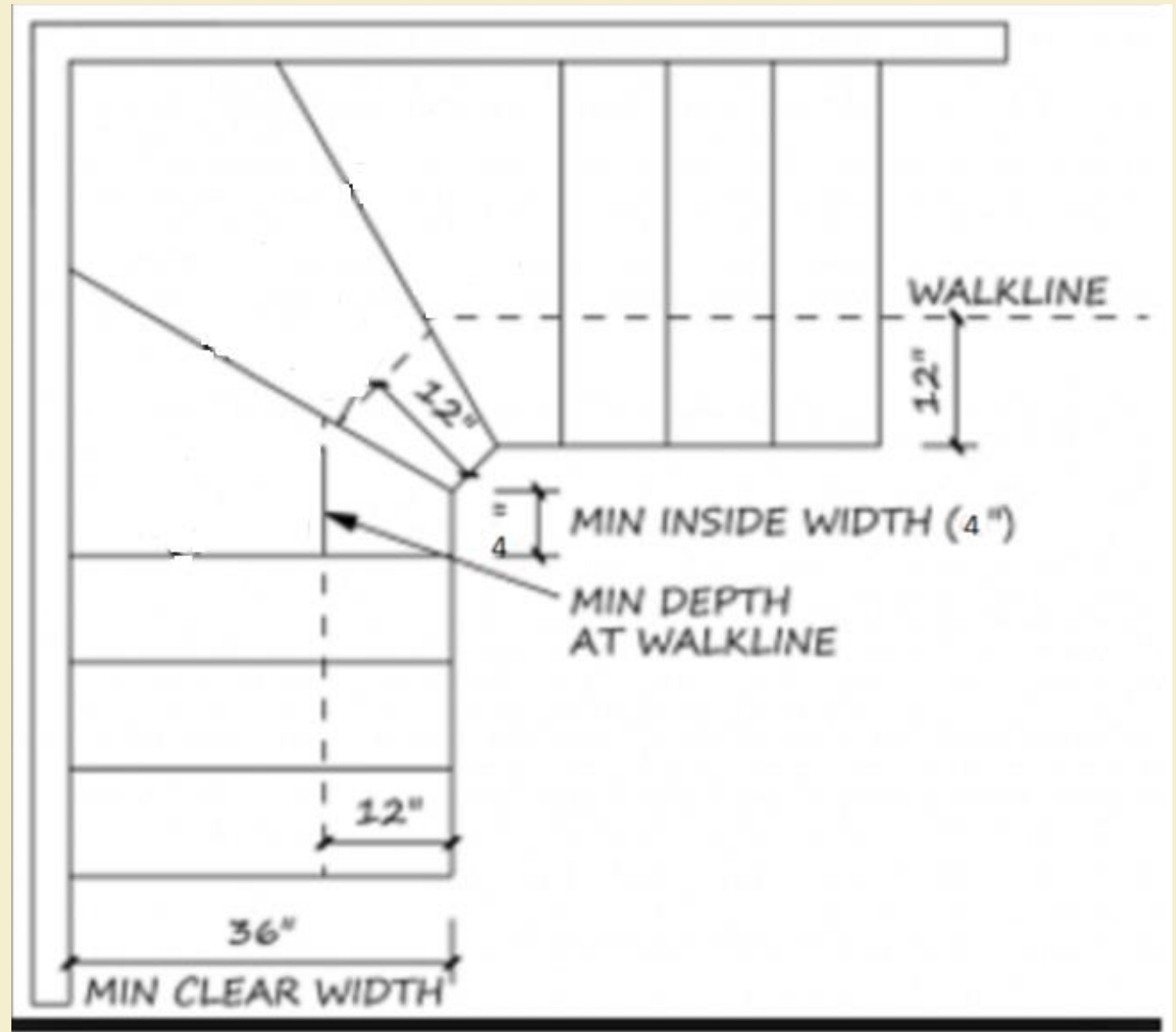
1. Extend the drywall separation on the wall between house and garage all the way to roof deck so that ceiling 1/2" sheetrock is not required (house and garage attics are separated)
2. Cover thin pull down stair door with 1/2" sheetrock or minimum 3/8" fire treated plywood adequately attached to garage side (Note: door must close completely and additional weight of sheetrock/plywood may require some type of lock, barrel bolt or other closure device to hold shut). Fire treated plywood must be factory stamped similar to what is used on townhouse roof decking at party walls. Note: some pull down stair manufacturers have stairs with a fire treated plywood door cover.
3. Non-combustible metal door openings or non-combustible pull down stairs
4. Scuttle hole lids will need to be trimmed out with 2x material, no thin profile door or window trim/casing, to hold in place during a fire event. Other non-combustible attachments like barrel bolts, hinge and hasp could be used.
5. Cover scuttle hole lids or pull down stairs doors with adequately attached 24 gage (0.48mm) sheet steel as allowed for duct penetrations listed under R309.1.1.

Approved By Gene Morton

Date 1/1/08

Q: Where is the walk line measured on winders?

A: Pull from the narrow side of the tread across the nosing or leading edge to a point 12" away from this inside corner and make a mark. If you do that on each winder tread and snap a line between the marks, that is considered your walk line as shown below by the dashed lines. Everything from the 4" minimum narrow side to this 12" walk line has to be uniform within 3/8" variance



Q: Which trade looks at Isokern Fireplaces and the loads they add to the building?

A: Per conversation with Tommy Rowland, if there is no gas line involved, it falls to the Building Inspector. Must have engineering to cover the loads on wood floors. Follow Mfr's installation instructions for flue & fireblocking.



Q: What are the required clearances for foam insulation?

R316.3 Surface burning characteristics. Unless otherwise allowed in Section R316.5 or R316.6, all foam plastic or foam plastic cores used as a component in manufactured assemblies used in building construction shall have a flame spread index of not more than 75 and shall have a smoke-developed index of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723. Loose-fill type foam plastic insulation shall be tested as board stock for the flame spread index and smoke-developed index.

Exception: Foam plastic insulation more than 4 inches (102 mm) thick shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is *approved* in accordance with Section R316.6 using the thickness and density intended for use.

R316.4 Thermal barrier. Unless otherwise allowed in Section R316.5 or Section R316.6, foam plastic shall be separated from the interior of a building by an *approved* thermal barrier of minimum $\frac{1}{2}$ inch (12.7 mm) gypsum wallboard or an *approved* finish material equivalent to a thermal barrier material that will limit the average temperature rise of the unexposed surface to no more than 250°F (139°C) after 15 minutes of fire exposure complying with the ASTM E 119 or UL 263 standard time temperature curve. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on NFPA 286 with the acceptance criteria of Section R302.9.4, FM 4880, UL 1040 or UL 1715.

A: Depends on the foam & the fireplace



Q: Do spray foam insulated walls still require fireblocking?

A: Foam is not one of the fireblocking materials listed in code (R302.11.1) but it may effectively block fire and prevent draft so it could be considered as an alternate method / material. However, fireblocking must be in place at framing inspection and the foam would not be in until insulated.



Q: When do we get the ESR for sprayed foam in attics?

R316.6 Specific approval. Foam plastic not meeting the requirements of Sections R316.3 through R316.5 shall be specifically *approved* on the basis of one of the following *approved* tests: NFPA 286 with the acceptance criteria of Section R302.9.4, FM4880, UL 1040 or UL 1715, or fire tests related to actual end-use configurations. The specific approval shall be based on the actual end use configuration and shall be performed on the finished foam plastic assembly in the maximum thickness intended for use. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

A: On the final inspection. It must be posted with the insulation installer's certification.



Q: How are we addressing termite treatment on additions?

A: The same as on new construction – Per R318.

R318.1 Subterranean termite control methods. In areas subject to damage from termites as indicated by Table R301.2(1), methods of protection shall be one of the following methods or a combination of these methods:

1. Chemical termiticide treatment, as provided in Section R318.2.
2. Termite baiting system installed and maintained according to the *label*.
3. Pressure-preservative-treated wood in accordance with the provisions of Section R317.1.
4. Naturally durable termite-resistant wood.
5. ~~Deleted.~~
6. Cold-formed steel framing in accordance with Sections R505.2.1 and R603.2.1.



Q: When does the code apply to an outdoor fireplace?



NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-647-0000

Outdoor Fireplaces

Code: 2012 Residential Code
Section: R101.2.2

Date: July 1, 2012
Rev.: February 17, 2017

Question:

Does the Residential Code apply to standalone outdoor fireplaces?

Answer:

Maybe. The 2014-2016 Approved Cumulative Amendments (Effective 1/1/2016) addresses the definition of Accessory Structures and their Code requirements from section R101.2.2. Fireplaces located less than 10 feet from other buildings or lot lines would be required to meet the provisions of the code.

Reference:

R101.2.2 Accessory Structures. Accessory structures shall meet the provisions of this code. Accessory structures not listed below are not required to meet the provisions of this code.

1. Decks, See Appendix M,
2. Gazebos,
3. Retaining wall, See Section R404.4,
4. Detached masonry chimneys located less than 10 feet from other buildings or lot lines,
5. Swimming pools and spas, See Appendix G,
6. Detached carports,
7. *Docks, piers, bulkheads,* and waterways structures, See Section R324.

Exception: Portable lightweight aluminum or canvas type carports not exceeding 400 sq ft or 12' mean roof height and tree houses supported solely by a tree are exempt from the provisions of this code.

Key Words: BBQ, cooking, fireplace

Questions from the floor

Training Topic:

TrusJoist – Holly Woitovich